Personal Wilderness Medical Kit

Version 1.2 10/7/99

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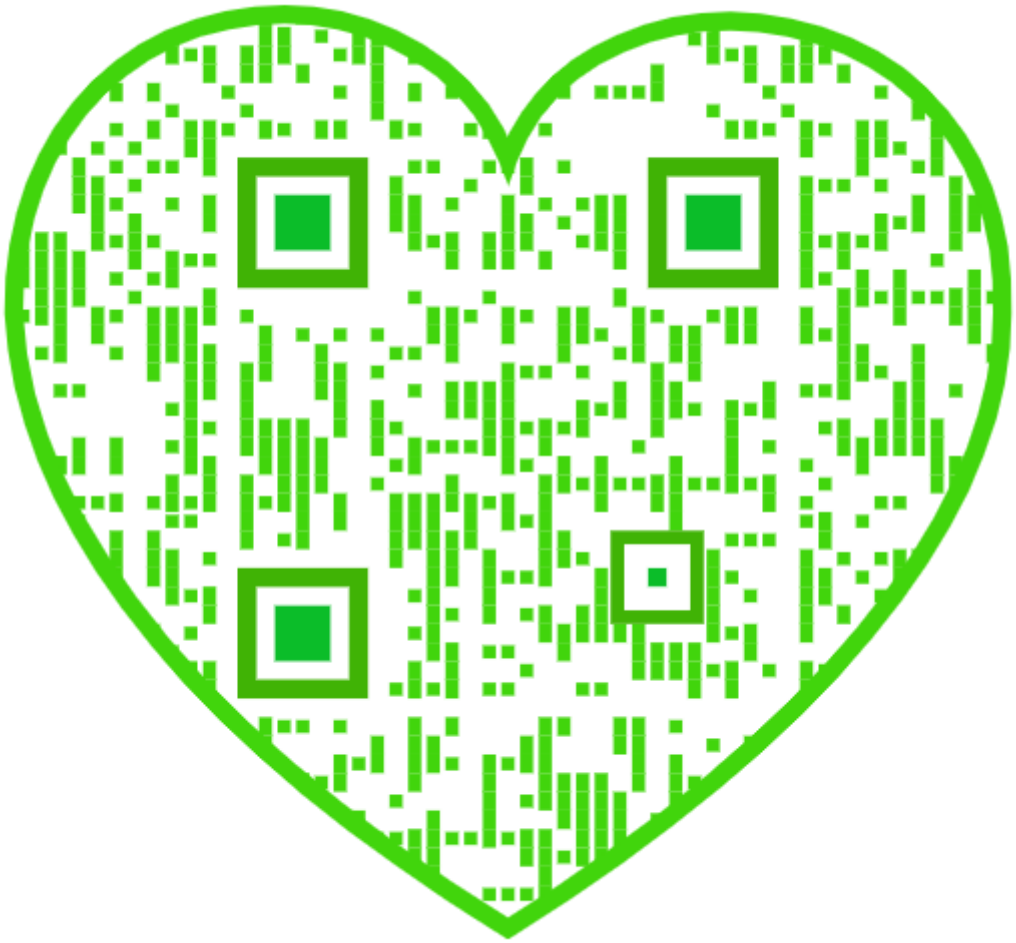
Revisions

This revision, 1.2, is offered in preparation for the release of a major revision of the WEMSI Personal Wilderness Medical Kit list, which will be numbered 2.0, and released at the beginning of 2000. You will note "redlined" changes throughout the lists, representing changes from version 1.1, which had remained virtually unchanged for years.

Some of the major highlights of the proposed changes are as follows. These are explained in more detail in the endnotes:

- A saline lock and saline flush have been added to the Advanced Kit, to allow WEMTs at the scene to start an IV, to give multiple medications, and to have a patent IV ready for when IV bags and tubing arrive.
- IM ketorolac (e.g., *Toradol*®) has been taken off the list, as it has virtually no advantages over oral ibuprofen (see endnotes).
- Tubex™ injections and syringes have been taken off the list, as the containers leak when overheated.
- A one-way valve has been added to the advanced kit, to provide some WEMT protection during mouth-to-endotracheal-tube ventilation.
- A small skin stapler has been added, for scalp wounds and for minor lacerations.
- Droperidol has been added as a multi-purpose replacement for both prochlorperazine (e.g., *Compazine*®) and haloperidol (e.g., *Haldol*®) for



sedation, nausea, and migraines.

- After due consideration, we have added midazolam (e.g., *Versed®)* to the Advanced Kit, for sedation for procedures and for control of seizures, and removed ciprofloxacin (e.g., *Cipro®*), bisacodyl (e.g., *Dulcolax®*), bismuth subsalicylate (e.g., *Pepto-Bismol®*) and cyclobenziprine (e.g., *Flexeril®*).

After a public comment period of three months – the deadline for comments is December 30, 1999 – we will post the new official version, numbered 2.0, on the WEMSI Web site, and announce it publicly through the usual channels, including the wilderness-emergency-medicine list (send "subscribe wilderness-emergency-medicine" to Majordomo@list.pitt.edu to subscribe; more information available at http://www.wemsi.org/).

Choosing a Wilderness Medical Kit: The Basics

Choosing the contents of a wilderness medical or first aid kit is hard. But if you are putting together such a kit, you may look to this document for help.

The Wilderness EMS Institute staff and contributors put a lot of effort into this document. One of our missions is wilderness medical education, so we are making the list public, but also showing how we decided on the list. The list might not be exactly what you need for ***your*** medical kit. But we hope you find this document, with all of its principles and explanatory notes, a good starting place for designing your own kit. If designing a large team kit, you may want to look at the WEMSI Team Medical Kit document, available at http://www.wemsi.org.

As we said, assembling a medical kit is hard. But there are many ways to make it easier. You can simply get a list from someone authoritative and assemble a kit based on that. But it may make more sense for you to ask certain basic questions, and then assemble a kit based on the answers.

Some obvious questions, but ones worth asking out loud at the beginning, are:

- **Who** is going to use the kit, and what is his or her level of training? *For WEMSI, these are people trained in accordance with the WEMSI WEMT Curriculum, who also have EMT-basic or EMT-paramedic training or the equivalent, and who have authorization from a physician to carry and use the kit as part of a wilderness EMS agency/SAR team.*

- **Who** will the kit provide for -- how many? And are there any **special needs** (e.g., pregnant women, diabetics, small children, dogs, horses)? *For WEMSI, the kits will be used to provide initial care for the subjects of wilderness and backcountry search and rescue operations, including lost person searches and mountain and cave rescue operations. The kits will also provide care for members of field teams, including dogs*

and horses, when they are remote from standard medical care.

- **How long** will the kit have to provide medical care for these people? *For WEMSI, the kit design is for the most common sort of mountain and cave search and rescue operations in North America – tasks usually lasting 4-12 hours, rarely lasting longer, perhaps up to a day or two without resupply.*
- **Where** will the people be going? For instance, there's no need for altitude-related medications if they're just in the Appalachian Mountains (where altitude illness is exceedingly rare), and no need for a snakebite kit if they're hill-walking in Ireland or Britain, where there are essentially no poisonous snakes. *For WEMSI, the answer is "in any wild or backcountry area or cave in North America, exclusive of the Arctic."*
- **How much** can they carry? If it's a river rafting trip, a fairly heavy kit is OK, but if it's for a long backpacking trip along the Appalachian Trail, where it's usually possible to get to a road and to a hospital within a day or so, a lighter kit is in order. *For WEMSI, the answer from the field is "if we gotta carry this around with us all the time, up and down mountains and through cave crawlways, it's gotta be small and light."*

Asking those questions is just the beginning. Next comes a delicate balancing act. For example: reconciling the team doctor (who wants you to carry everything including four bags of IV fluids at 2.2 lbs. a bag) and the team members (fanatically weight-conscious backbacker-type ones who cut the handles off their toothbrushes and the margins off their maps and who want a kit that weighs less than an ounce). Another example: we had considered adding an ampoule of 50% dextrose to the kit. But it is very heavy, and fragile, and in almost all cases, one can get some oral glucose or other food into any hypoglycemic patient in the wilderness. For that matter, instant glucose test strips weigh very little; however, they have to be kept in an airtight container that is fairly large, and have a short shelf life when exposed to heat (as in a pack or car in the summer). Since almost all wilderness patients need glucose or food calories, we did not include glucose test strips in the kit, either.

Here are a few principles to guide assembly of your medical kit, though competing ones that must be delicately assessed and balanced.

Durability

Wilderness medical kits must withstand crushing and drop shocks. The degree of protection depends on the environment. For standard mountain search and rescue, the padding of a soft case, that can be inserted in a waterproof bag, may be acceptable. For cave rescue, though, a waterproof and

crushproof case such as those made by Pelican, or a surplus ammunition box, is much more appropriate. For kits that may be used in both settings, the kit can be in a soft nylon organizer case, inserted into a waterproof plastic or nylon bag (or even just a pack with a good raincover) for mountain rescue, and inserted into a Pelican case or ammo box for cave rescue.

Wilderness medical kits must also withstand temperature extremes – medications that require refrigeration or a controlled room temperature, or that are dangerous when frozen and rewarmed, are not acceptable. Information about drug stability under temperature extremes is difficult to find, but some references can be found at http://www.wemsi.org in the Pharmacology Lesson Plan.

Wilderness medical kits must also be usable despite occasional outdated medications – medications that are unsafe when outdated, such as tetracycline, are not acceptable. Medications that still have significant potency after expiration are ideal for wilderness kits. (Most drugs are still good for a year or two after their expiration date, if not grossly abused or kept at extreme temperatures, but there are exceptions.)

Flexibility

Wilderness medical kits must have the equipment and medications to handle common and serious problems. But to save weight, equipment and medications should have multiple uses. Medical kits used by search and rescue team WEMTs should be usable for dogs and horses, as these animals are often part of the SAR effort. (That's why the WEMSI WEMT Curriculum also contains a section on veterinary emergencies.)

Ideally, a SAR medical kit should separate into smaller modules -- so as not to have to carry entire kit on every task, especially if it is a "bash" team trying to get into a patient as quickly as possible – also to be able to divide the kit among team members. See the *Organization* section below for WEMSI's solution for this.

Although a SAR medical kit may be used just in one area, it should be adequate for mutual aid requests to other regions. For example, a North American SAR WEMT kit should carry medications for high altitude illness. Even teams in the Appalachian Region of the Mountain Rescue Association, or the Eastern Region of the National Cave Rescue commission should carry these. These "out of region" medications could theoretically be left out except for out-of-region responses. On the other hand, they don't weigh much. And, a high-altitude out-of-region response might come during an in-region operation -- meaning that WEMTs can't go home to get the medications that they've left out. And suddenly going to altitude without taking *Diamox*® is definitely ***not*** a good idea.

Kit Capabilities

There are two main targets for the WEMSI Personal Wilderness Medical Kit.

The first target of the kit is the search subject or rescue victim. The WEMT should have enough equipment and drugs, within the context of a kit that weighs less than a pound or so and isn't very bulky, to provide stabilizing care for most severe wilderness injuries and illnesses. A team with a larger medical kit will usually arrive within a several hours, and with some items from a standard EMT kit (BP cuff and stethoscope, bandages and dressings, splints), and maybe some IV fluids, the WEMT can provide reasonably good care from most common wilderness injuries and illnesses.

The second target of the kit is the field team's members. WEMTs should have enough medication to start treatment for common problems in the field, then for members to get home, get an appointment with their family doctor, and have the condition re-evaluated. Considering the realities of both SAR operations and getting appointments with office-based doctors, enough for 3 days of treatment seems reasonable.

Expense

Some SAR team members will have to purchase medications with their own money -- many SAR teams can't afford to issue expensive kits to their WEMTs. Team WEMTs with self-purchased medications generally use their kits for personal trips as well as for SAR operations.

Samples are often available through physician offices, or from manufacturers, which may help decrease the cost of members' kits.

Even if the team issues everything in the kits, few SAR teams have much money, so medications and equipment must not be too expensive.

Safety

Any wilderness medical kit should contain instructions on the safe use of its medications. It is quite possible that the WEMT becomes injured, and a team member with less training will need to use the kit. And, a reminder about uses and dosages is always appropriate for anything that isn't used on a regular basis.

There are (at least) two good approaches to this. First, the physician medical director, or prescribing physician, can provide detailed standing orders for the use of medications in certain situations, and a copy of these should be placed in the medical kit. Second, a list of medications, both those in the kit as well as common medications carried in wilderness traveler's kits, their common indications, contraindications, dosages, and any cautions, provides a useful reference. Several of these are available in wilderness first aid books, and

WEMSI is drafting a "pocket wilderness pharmacology reference" with the WEMSI Wilderness EMT in mind. Standing orders should be provided by the WEMT's physician medical director.

Accountability and Security

Physicians should be reluctant to prescribe or issue medication to WEMTs unless the medications are managed in an acceptable way.

There are two ways for a physician to provide medications for medical kits. First is to ***prescribe*** the drugs for each individual WEMT, and expect the WEMT to use the kit for personal use while in the wilderness. The WEMT may then to use these personal medications for others when needed, under the various state "Good Samaritan Laws," and more importantly, under the common-law principle that requires one to provide care up to one's capacity when aiding an individual in distress – lest one be guilty of gross or willful negligence.

However, a more professional arrangement is for the physician have a pharmacy, usually a hospital pharmacy, ***issue*** the drugs to each WEMT. Consult with the local Drug Enforcement Administration office, and with a hospital pharmacist experienced in dealing ambulance services.

Many medications in wilderness medical kits are available in inexpensive generics without a prescription – over-the-counter or "OTC." While it is possible to issue OTC medications to each WEMT, the extra cost may be unwarranted. If each WEMT is responsible for replacing OTC medications as they become outdated, it may also make sense to make each WEMT responsible for replacing prescription medications, too. If so, require WEMTs to inspect their kits on a regular basis, perhaps once every two months, and replace drugs or equipment that are outdated or damaged. Drugs and equipment used for patient care should be replaced immediately.

This document now provides a place to note the expiration date of medications, as well a checkbox to use during inspections. A Microsoft Word version of the tables that follow is downloadable from http:www.wemsi.org -- and then the expiration date can be filled in on one's computer, and a copy placed in the kit for inspections.

Especially for scheduled drugs ("narcotics") that are issued, it is important to document usage, and to document when drugs are "wasted" or destroyed. The local DEA office and a local hospital pharmacist can help set up procedures to meet federal and state requirements. In general, scheduled drugs must be kept secure. During wilderness travel, two small, lightweight travel locks, one each on external and internal nylon cases provides the dual locking that is usually required; although this is not much of a deterrent, keeping the kit in one's pack in the backcountry is probably better security than a heavy steel box in an urban ambulance. However, when a kit is ***not*** in

the backcountry, it is imperative to keep it secured as well as possible.

Organization

The organization of any kit will be contentious whenever more than one person is involved. However, most people will agree that making the kit modular, so that a lighter subset can be carried in certain circumstances, or the kit can be divided among different people, is valuable. WEMSI has found it so for our kits, and has organized them as follows. (See Figure.)

The **Minimum Module** is to always be carried by Wilderness EMTs, even if on a rapid response for a rescue, or on a small, highly mobile scratch ("hasty") search team. The design of several commercial medical kit bags allows a pouch which can Velcro into a larger bag. The smaller pouch would be ideal for the Minimum Module, and the larger bag for the Search Module. However, the Minimum Module along with the Advanced Module is big enough that many WEMTs carry two full-size nylon first aid bags, one with the Minimum and Advanced Modules, and another with the Search Module.

The **Advanced Module** is for those with ALS (Advanced Life Support) skills – the ability to start IVs and give IV or IM medications, and to perform digital intubation. The Advanced Module is an enhancement to the Minimum Module -- every WEMT with advanced training (EMT-Intermediate and above) and accreditation to perform advanced skills should carry this additional module whenever on a search and rescue operation.

The Search Module should be carried by WEMTs when going on a search, as opposed to rescue, task. The Search Module is carried for most search tasks, especially if the team is fairly large or will be in the field for an extended period. For some searches, both cave and above ground, it may be appropriate to "stage" a full kit, including the Search Module, at a central location, easily accessible to all search teams. For a large team that may split up, several WEMTs may each take a Minimum Module with only one WEMT carrying the full kit, including a Search Module.

Packaging

First aid kit bags from Atwater-Carey (1-800-359-1646; http://www.omnibus.com/atwatercarey/), Outdoor Research (http://www.orgear.com/medical/medical.htm), or similar providers work nicely for organizing the WEMSI Personal Wilderness Medical Kit. The Minimum and Advanced modules fit nicely in the Atwater-Carey Expedition kit bag, and the Search Module fits in another similar bag. These bags have the great advantage of keeping things better organized, important if you're using the bag all the time.

For above-ground rescue, just putting these bags in a plastic bag deep in one's

pack should be adequate protection. For caving, you can put the entire contents into a Pelican case, ammunition box, or Tupperware box that can be sealed with duct tape.

For pills, it is ideal to have prescription medications in separate blister packaging from the hospital pharmacy, with an expiration date marked on each tablet's packaging. Some nonprescription medications are also available in blister packaging. Most but not all of the blister packs have expiration dates on them. You can use a laundry marker to put expiration dates on each individual pill's packaging if needed. For pills not available in blister packages, it's easy enough to put some in a tiny zipper-lock plastic bag (often you can get a few free from your local hospital pharmacist). Print up a label on your computer with the name and strength of the pill, and the expiration date. Cut out the label, "laminate" it with some clear tape, and place in the zipper-lock bag with the pills to provide a good label.

Some drugs come only in ampules that are opened by snapping off the top. They have the advantage of being very compact and light, but the disadvantage that they are fragile and difficult to pack. Small vials with rubber plugs on the top, covered by flip-off lids, are probably superior -- however, many drugs are only available in snap-off ampules, so you need to develop packaging for this.

Many people have tried many different means of packaging. Most of these have been on small packages people find in their "junk" boxes and therefore can't generally be reproduced by others. What you need is something that is:

- cheap, or easy to make
- provides moderate protection against breakage (note that the outer packaging of one's medical kit should also provide some protection, so this inner packaging need not be "bombproof" or "caveproof")
- light
- not bulky

Some have made a package using the cardboard "rack" in which ampules are shipped in the box. This can be cut down to the right size for the number of ampules. One can then cut off a piece of stiff 3/8" closed-cell foam the same size as the "rack" and use duct tape to tape it on the front of the rack. Duct-tape the bottom, but leave the top open. You can then slide the ampules in from the top. They seem to stay in just fine without taping the top. You could tape some foam or an additional piece of stiff material to the back to provide additional protection, especially from flexing that might break the neck of the ampul. But that would add to the bulk and weight.

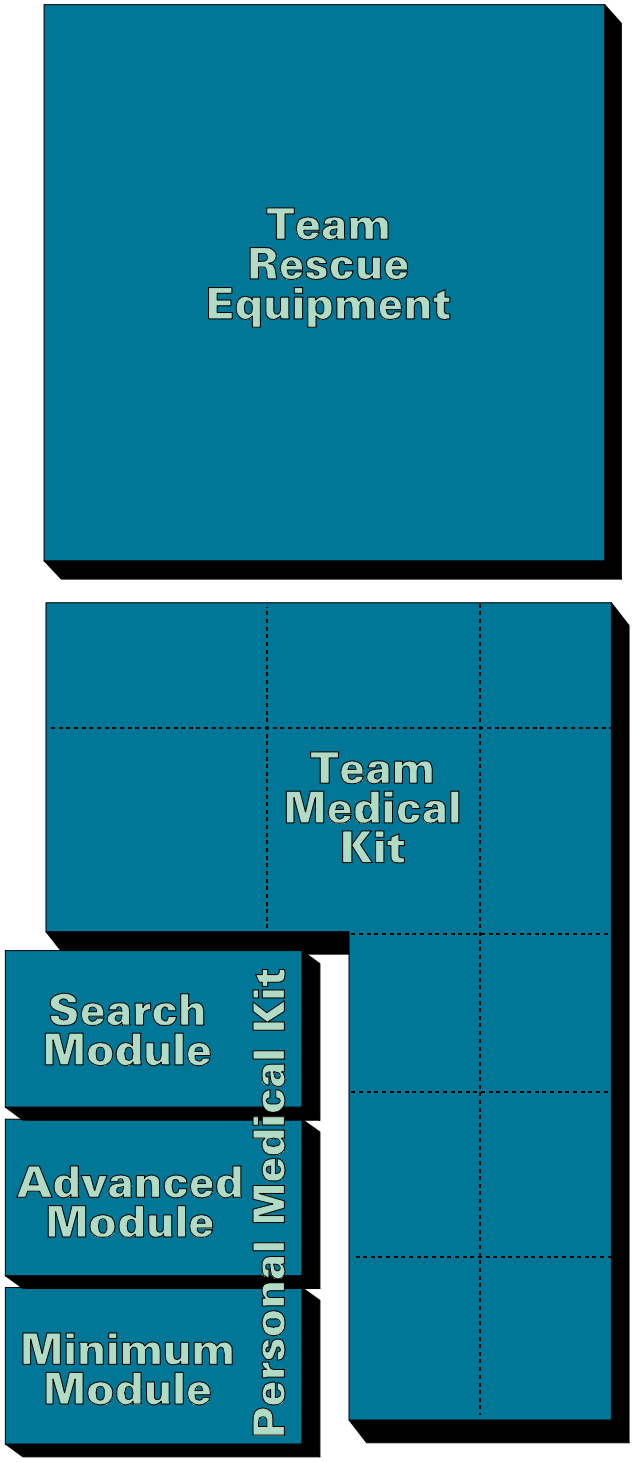
For storing medication vials and ampules, many are pleased with a tiny Plano™ fishing tackle box called a MiniMagnum 3213 (http://www.planomolding.com/tackle/3213.html, available inexpensively

from many hardware and sports stores, and via the Internet from suppliers as http://www.wserv.com/oceanpro/inventory/tbox98.htm) This tiny box has small compartments the perfect size for two small medication vials, and with a tiny bit of padding in each small compartment, provides shock protection, as well as organization. With some modification (cutting) with a hot soldering iron or a tool such as a Dremel™ drill with a small cutting saw, the larger vials of ceftriaxone and water for dilution will fit into the larger compartments of this box.

Repackaging fluids such as StingEeeze™, povadone-iodine and tincture of benzoin into smaller bottles can save weight and bulk, provided the bottles don't leak all over the inside of the kit. StingEeze™ can be repackaged in a 4cc eyedropper type bottle, available from suppliers such as Cat No. 0300710A from http://www.fisherscientific.com/, and povadone-iodine solution and benzoin can be repackaged into eight-cc Nalgene™ bottles, available from suppliers such as http://www.fisherscientific.com/, Cat No. 02-923-11A, NNI No.: 2002 9025.

Wilderness EMS Institute

Medical Kit System Overview



Notes:

1. See WEMSI Team Medical Kit and Personal Wilderness Medical Kit document text for details.
2. Minimum Module carried by all WEMSI medics at all times.
3. Advanced Module carried only by WEMSI medics with ALS accreditation, at all times.
4. Search Module carried by WEMSI medics when on a search or other operation (i.e., not a rescue) or as an option on some rescues.
5. A Personal Wilderness Medical Kit is to be included in the Team Medical Kit
6. Items such as litters considered part of Team Rescue Equipment rather than Team Medical Kit.
7. Team Medical Kit divided into modules so can be distributed among members of team; or, on some operations, only selected modules may be carried into field.

Minimum Module[1]

Prescription-only items are noted by ℞
Names are U.S. generic and tradenames. Items removed from version 1.1 noted by ~~strikeout~~, items added to version 1.1 underlined; both types of changes also noted by a vertical line in the margin.

✔	Exp[2] Date	#	Item and size/strength	Usual Dose
Pain Meds[3]				
		~~20~~ 10	~~ibuprofen 200 mg tablets (e.g., *Advil*®, *Nuprin*®, *Motrin*®)~~[4] naproxen 220 mg tablets (e.g., *Aleve*®)[5]	Pain: ii PO, then i PO BID
		~~25~~ 12	℞ acetaminophen with hydrocodone tablets (e.g., *Vicodin*®, *Lortabs*®, *Anexsia*®: 500 mg acetaminophen, 5 mg hydrocodone)[6,7]	Pain: ii PO Q4H PRN
Allergy Meds				
		1	℞ injectable epinephrine anaphylaxis kit (*Epi-Pen*®) (may omit if have advanced module with injectable epinephrine)	anaphylaxis: i injection
		1	℞ albuterol Rotocap™ inhaler[8]	asthma: i cap Q4H PRN
		~~4~~ 8	℞ Rotocap™ albuterol capsules for above[9]	
		6	diphenhydramine 25 mg tablets (e.g., *Benadryl*®)[10]	allergy/sedation: i-ii PO Q4H PRN
		~~20~~ 5	℞ Prednisone ~~10~~50 mg tablets[11,12,13]	allergy/asthma: 50 mg PO QAM
GI Meds[14]				
		12	loperamide 2 mg. tablets (e.g., *Imodium-AD*®)	diarrhea: ii PO, then i PO q loose BM up to 7/day
		~~10~~	~~℞ prochlorperazine 10 mg. tablets (e.g., *Compazine*®)~~[15,16]	
		4	meclizine chewable 25 mg. tablets (e.g., *Bonine*®, *Antivert*®)[17]	motion sickness: i PO TID PRN
		4	℞ *TransDerm Scop*® transdermal scopolamine patches	motion sickness: i to skin Q3D
Bites and Stings [18]				
		1	Sawyer Extractor™ Kit	as directed
		1	*Sting-Eeze*® solution 15 cc bottle[19,20]	as directed
Cardiac Meds				
		~~30~~ 4	Aspirin 325 mg (5 gr.) tablets[21,22]	chest pain: i PO
		~~6~~	~~℞ nifedipine 10 mg capsules (e.g.,~~	

✔	Exp[2] Date	#	Item and size/strength	Usual Dose
			~~*Procardia*®, *Adalat*®~~)[23]	
		1	~~℞~~ bottle nitroglycerine spray (e.g., *Nitrolingual*®)[24]	chest pain: i spray SL Q3' PRN
Antibiotics Etc.[25]				
		~~24~~ 6	~~℞ erythromycin tablets 250 mg tablets~~[26] azithromycin 250 mg tablets (e.g., *Zithromax*®)[27]	infection: ii PO, then i PO daily
		~~12~~	~~℞ ciprofloxacin (e.g., *Cipro*®) 250 mg. tablets~~[28,29]	
		~~3~~	~~Bacitracin or povadone-iodine ointment1 g foil packets~~[30] ℞ 3.5 g tube polymyxin/bacitracin (e.g., *Polysporin*®) or bacitracin ophthalmic ointment[31]	wounds: to skin BID
		1	mild liquid soap 30 cc bottle, e.g., *Hibiclens*®; or, a small piece of solid soap (to save weight) ; or, a small (e.g., 8 cc) bottle of waterless hand sanitizer[32,33]	
		1	Povadone-iodine solution 15 cc bottle (e.g., *Betadine*®)[34]	
Thermometer				
		1	~~Becton-Dickinson~~ digital thermometer (may substitute Radio Shack™ or similar continuous-reading digital thermometer)	
		1	spare battery for above	
		10	thermometer covers for above[35,36]	
Misc.				
		4	thiamine (vitamin B-1) 300 mg. tablets[37]	starvation, prior to refeeding: i PO
		4	℞ haloperidol 5 mg. tablets (e.g., Haldol®)[38]	sedation: i-iiii PO
		2	packets *Gatorade*® or *ERG*® powder, each to make ½ liter	
		~~2~~4	pair exam gloves[39]	
		1	pocket CPR shield	
		1	1" (by at least 10 yards) waterproof adhesive tape[40]	
		~~3~~1	~~small prepackaged units of tincture of benzoin~~[41] 8 cc bottle tincture of benzoin[42]	
		6	sterile cotton applicators ("*Q-tips*®")[43]	
		1	3" by 5 yards (stretched) elastic bandage (e.g., *Ace*®, *Coban*®, *Vet-Wrap*®)	
		1	3" by 5 yards (stretched) conforming roller gauze (e.g., *Kling*®)	
		8	medium-size (e.g., 3" x 3") gauze pads[44]	
		~~1~~2	OB-type compressed vaginal tampons[45]	

✔	Exp[2] Date	#	Item and size/strength	Usual Dose
		3	small pieces of clear adherent dressing (e.g., *Tegaderm*™, *OpSite*™)[46,47]	
		3	#11 scalpel blades, sterile	
		1	string for ring removal	
		1	paper clip, medium size[48]	
		2	large safety pins	
		1	nylon zipper bag or equivalent for MedKit	
		1	waterproof contents/protocols/standing orders[49]	
		5	one-pint freezer-style zip lock plastic bags (if not available elsewhere in SAR pack)	
		2	small (5-staple) skin staplers[50]	
		5	WEMSI Patient Record Forms[51]	
		5	WEMSI Patient Record continuation sheets	

Advanced Module[52]

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✔	Exp Date	#	Item and size/strength	Usual Dose
		~~2~~	~~℞ ketorolac tromethamine 60 mg. injection (e.g., *Toradol*®)~~[53]	
		2	℞ morphine sulfate 10 mg/mL, 1 mL vials[54]	pain: 2-10 mg IV Q10'-Q4H PRN 5-10 mg IM Q½-4H PRN
		~~2~~4	℞ naloxone 1 mg/mL, 1 mL ampul (e.g., *Narcan*®)	excess narcotic: 1-4 mg IV/IM
		1	℞ midazolam 5mg/mL, 10 ml vial (e.g., *Versed* ®)[55]	sedation: 3-5 mg IV Q10' seizure: 14 mg IM
		1	℞ ceftriaxone 2 g powder, and sterile water 10 mL, for reconstitution (e.g., *Rocephin*®)[56]	infection/open fracture: 2 g IV/IM
		2	℞ epinephrine 1:1000, 1 mL ampul: substitutes for Epi-Pen in basic kit	anaphylaxis/severe asthma: 0.3-0.5 cc SQ Q10'
		2	℞ diphenhydramine 50 mg/1 mL vial (e.g. *Benadryl*®)	allergy: 50-100 mg IV/IM
		~~2~~	~~℞ prochlorperazine injection 10 mg/2cc (e.g., *Compazine*®)~~[57]	
		~~2~~	~~℞ haloperidol 5mg/1cc injection (e.g., *Haldol*®)~~	
		4	℞ droperidol 2.5 mg/mL, 2 mL vial	sedation/nausea: 2.5-10 mg IV/IM
		2	℞ dexamethasone 10mg/mL, 10 mL vial (e.g., *Decadron*®)[58]	
		6	alcohol prep pads, in foil	
		~~1~~	~~Tubex™ injector~~[59]	
		2	℞ 1 cc syringes	
		2	℞ 3 cc syringes	
		2	℞ IM needles	
		2	℞ SQ needles	
		2	℞ 18 ga, long, over-the-needle IV catheters[60]	
		1	venous tourniquet (for starting IV)	
		2	saline lock[61]	
		1	20 cc bottle saline flush solution	

✔	Exp Date	#	Item and size/strength	Usual Dose
		1	℞ 6.5 mm endotracheal tube[62]	
		1	One-way valve for endotracheal tube[63]	

Search Module

Prescription-only items are noted by ℞
Items removed from version 1.1 noted by ~~strikeout~~, items added to version 1.1 underlined; both types of changes also noted by a vertical line in the margin.

✔	Exp Date	#	Item and size/strength	Usual Dose
Pain Meds Etc.				
		30	acetaminophen tablets, 325 mg (e.g., *Tylenol*®)[64]	pain/fever: i-ii PO Q4H PRN
		~~4~~	~~℞ cyclobenziprine 10 mg. tablets (e.g., *Flexeril*®)~~[65,66]	
		4	℞ phenazopyridine hydrochloride tablets, 200 mg (e.g., Pyridium®)[67]	UTI symptoms: i PO TID
Cough, Cold, Allergy Etc.[68]				
		1	~~3~~15 mL squeeze bottle oxymetazoline nasal spray (e.g., *Afrin*®)[69]	nasal congestion: i spray BID PRN
		8	12-hour sustained-release pseudoephedrine tablets 120 mg. (e.g., *Sudafed*®)	nasal congestion: i PO BID PRN
		8	12-hour sustained-release chlorpheniramine tablets 8 mg. (e.g., *Chlor-Trimeton*®)[70]	allergy symptoms: i PO BID PRN
		8	~~dextromethorphan-containing cough drops (e.g., *Hold*®)~~ ℞ *Humibid-DM® tablets*[71]	cough: i PO PID PRN
Eye				
		1	℞ 1 mL dropper tube tetracaine ophthalmic solution	painful eye exam: 2-20 drops
		3	fluorescein strips[72]	as needed
		~~1~~	~~℞ 3.5 g tube polymyxin/bacitracin (e.g., *Polysporin*®) or bacitracin ophthalmic ointment~~[73]	
		1	2 mL dropper bottle cyclopentolate ophthalmic solution 0.5% or 1% (e.g., *Cyclogyl*®)	corneal abrasion or snowblindness:
GI				
		~~12~~ 8	~~antacid tablets~~ famotidine tablets 10 mg (e.g., *Pepcid-AC*®)[74]	reflux/hyperacidity: i-ii PO BID PRN
		~~4~~	~~bisacodyl tablets 5 mg (e.g., *Dulcolax*®)~~[75,76]	
		~~12~~	~~bismuth subsalicylate tablets (e.g., *Pepto-Bismol*®)~~[77]	
Allergy				

✔	Exp Date	#	Item and size/strength	Usual Dose
		1	℞ 15 g tube fluocinolone acetonide cream 0.2% or similar high-strength steroid cream or lotion (e.g., *Valisone*®, *Benisone*®, *Lidex*®, *Kenalog*®, *Aristocort*®, *Uticort*®, *Synalar*®)	allergic rash/insect bites: apply to rash QID PRN
		1	℞ 1 oz. tube *Pramosone*® 1% or *Aveeno*® cream[78]	itching: apply to skin Q4H PRN
Altitude Etc.[79]				
		6	acetazolamide tablets 250 mg (e.g., *Diamox*®)	preventing AMS: ¼ tab (62.5 mg) PO BID treating AMS/HACE: 250 mg PO BID
			~~℞~~ nifedipine capsules 10 mg (e.g., *Procardia*®, *Adalat*®)	HAPE: 10-30 mg PO QID
Misc.				
		1	~~15 g tube miconazole nitrate cream 2% (e.g., *Micatin*®, *Monistat*®)~~10 mL bottle clotrimazole solution (e.g., Lotrimin®)[80,81]	fungal skin infection: apply BID-QID yeast vaginitis: i mL intravaginally daily
		1	1 cc TB syringe, no needle (as vaginal applicator for above antifungal)	
		1	pair small sharp scissors (not necessary if available on WEMT's pocket knife)	
		1	pair fine-point splinter forceps (not necessary if available on WEMT's pocket knife)	
		1	SamSplint™ or equivalent flexible splint[82]	
		4	3" x 4" pieces of moleskin	
		10	small adhesive bandages (e.g., 1" x 3" *Bandaids*™, *Coverlet*™)	
		3	~~small pieces of clear adherent dressing (e.g., *Tegaderm*™, *OpSite*™)~~	
		5	medium-size "suture strips"[83]	
		~~6~~	~~sterile cotton applicators ("*Q-tips*®")~~[84]	

Physician Addendum

This provides some general ideas for items that physicians may want to add to their kits; for purposes of standardization, recommend packaging this separately from the other kits.

✔	Exp Date	#	Item and size/strength
			penicillin
			ciprofloxacin (e.g., *Cipro*®) 250 mg. tablets
			caffeine pills[85]
			trimethoprim/sulfamethoxasole
			Duragesic® patches
			~~midazolam~~
			ketamine
			IV thrombolytic[86]
			a cobalt blue penlight
			a pocket otoscope and opthalmoscope
			prescription pad
			Merocel® epistaxis tampons
			a Foley catheter
			local anaesthetic
			~~wire~~ saw for amputations[87]
			Kelly clamp
			needle holder
			suture material
		12	bisacodyl tablets 5 mg. (e.g., *Dulcolax*®)

Notes

(new notes since version 1.1 are in *italics*)

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[1] Some have suggested to move 2/3 of each of the analgesics, etc. into the search kit, but this makes the kit as a whole more cumbersome; also, it makes it more likely that the minimum kit will be out of a medicine when needed.

[2] Some of the *over-the-counter (OTC) medications recommended for this medical kit do not have expiration dates stamped on them. For such medications, we recommend that WEMTs enter an expiration date two years from the date purchased and inserted in the medical kit.*

[3] In Minimum Kit because: WEMT-Basics may need to give pain medications to the injured to assist self-rescue.

[4] Oral pain medications may allow a patient to self rescue and thus are part of the Minimum Kit. The Advanced Kit contains injectable narcotics but a basic provider might have to use the kit and thus should have access to oral medications.

[5] *For all intents and purposes, naproxen has the same side effects and efficacy as ibuprofen, but can be taken only twice a day as compared to ibuprofen. Naproxen is also available without a prescription as an inexpensive generic. Some feel that choline/magnesium salicylate (e.g., Trilisate®), although a prescription drug, may be a better drug than naproxen. However, at present, this is still a minority opinion, and the majority recommend staying with an inexpensive OTC drug. See* http://www.pitt.edu/~kconover/ftp/trilisate.htm *for details and share your opinions with the wilderness-emergency-medicine Internet discussion list, instructions for subscribing at the beginning of this document..*

[6] Some suggested sublingual morphine as a noninjectable stronger narcotic; I've not been able to find any morphine products marketed for this use, nor any good information on any pill formulations that could be used this way. Also suggested was Duragesic® slow-release fentanyl patches; however, they take a long time to build up, and thus are not very appropriate for immediate acute pain. They might be acceptable for long-term pain relief during an evacuation, but that's not the purpose of this personal wilderness medical kit. They might make a good addition to a team kit.

[7] *In light of our attempts to lighten the kit, and the time span for which the kit is designed, we decreased the number of hydrocodone/acetaminophen tablets.*

[8] Comment> I would recommend using a metered dose inhaler rather than RotoCaps in a wilderness environment. Though it is controversial, many of my pulmonary colleagues think there are potential problems using RotoCaps in humid (i.e., coastal, rainy, the South in the summer) environments. When humid, the particles may aggregate and not be deposited effectively in the distal airways.
Reply> Interesting. I hadn't heard about this. A dispenser and the four rotocaps that fit inside (with a little trimming of the blister packages) is less than half the size of a metered-dose inhaler, and about a fourth the weight. And remember, we're asking people to carry this stuff with them _all_ the time. Is the extra weight worth it? Ask your pulmonary friends, add in your own memories of carring a pack during a long search, and please get back to me with your thoughts.
Another commentor also queried whether there would be problems with the Rotohaler working well in the field.
Re-Reply> When I queried the attendings I have heard express skepticism over the use of powder inhalers in the past, none of them could provide a reference to support their claims. On searching the literature, I could find little objective data to substantiate this as a big problem. In fact, the best article (Hiller et al, J. Pharmaceutical Sci 1980; 69(3):334-7.) indicated that ALL aerosols tested had increases in particle size at high humidity and that MDI's [Metered Dose Inhalers] tended to be MORE unstable than powder-generated aerosols!

Given these facts, I retract my concerns about use of powder inhalers and vow to distrust all of my attendings for at least 6 mos.
I still think MDI's might offer some advantages in terms of # of doses per oz. and more universal knowledge of technique, but I don't feel strongly enough to recommend one system over the other. The point may become moot over the next few years as CFC's are banned in other products and the price of MDI's goes up (maybe a lot) since the propellant will be less widely available.

[9] *Experience with severe asthmatics in the backcountry has led many to recommend more albuterol.*

[10]Comment> Does one need two sedating antihistamines (benadryl and chlortrimeton®? Perhaps Seldane® would be preferable to the latter.
Reply> 1. Don't like the Seldane/erythro interaction.
Reply> 2. Seldane is a poor antihistamine for acute (as opposed to chronic) use.
Reply> 3. We wanted both a short, strong-acting antihistamine (diphenhydramine=Benadryl®) for acute short reactions (beestings, dystonic reactions, etc.), and something longer-acting for more long-lived problems (rhinitis, poison ivy, etc.) and Chlor-Trimeton 12 mg extended pills are the least sedating good Q12H antihistamine we could find.

[11] In Minimum Kit because: may be needed to treat bronchospasm or allergy, and the epi and albuterol will wear off in relatively short order (hours).

[12] Comment> I would recommend more prednisone tablets. 60 mg is one dose for an asthma exacerbation.
Reply> Agree. Increased from 6 to 20 to allow multiple large doses for problems such as high altitude cerebral edema, severe allergy, or severe asthma.

[13] *Prednisone is available in 10 mg, 20 mg, and 50 mg tablets. The usual dose of prednisone for severe asthma or allergy is 40-60 mg daily, and lower dosese are rarely needed, so switching to 50 mg tablets decreases the weight and bulk of the kit slightly without any significant increase in expense.*

[14] In Minimum Kit because: motion sickness, vomiting and diarrhea may all immobilize a rescuer.

[15] Comment> I think compazine suppositories might be preferable to pills, but I recognize the storage problems etc.
Reply> People can grind up a pill, mix it with an M&M from their gorp, or some antibiotic ointment, and make their own suppository.

[16] *Many people questioned the utility of an oral medication for nausea and vomiting, other than a chewable pill for motion sickness (meclizine), and though the pills could potentially be used as a suppository, the utility seemed so low that we have removed this medication.*

[17] Comment> GI: Isn't meclizine an Rx in the U.S.?
Reply> If bought as Antivert®, yes; if bought as Bonine®, no.

[18] In Minimum Kit because: bites and stings occur unpredictably and these treatments must be applied immediately to be of any use. Local sting treatment is included because the pain from multiple stings may be disabling to a rescuer.

[19] Comment> Is Sting-Eeze of proven efficacy?
Reply (KC)> No good scientific evidence I'm aware of, but anecdotally it works like a charm. It's a witches' brew of all available OTC anesthetics and sting relievers. I've used it with good success myself; it really helps.

[20] *Fifteen cc's is a lot to carry for something that is used in 0.5cc doses, max. It is easy to repackage some of this in a small dropper bottle, e.g., a 4cc eyedropper type bottle, Cat No.: 0300710A from* http://www.fisherscientific.com/.

[21] In Minimum Kit because: aspirin so important in the early treatment of unstable angina or

MI, which is becoming more common in the wilderness.

[22] *We have decreased the dose, relying on naproxen and hydrocodone as analgesics, and reserving aspirin for use in chest pain.*

[23] Comment> Advanced stuff: I would add sublingual nitroglycerin and/or paste to the list.
Reply> They don't last long in a pack, especially in the summer and if being kept in a car trunk; keeping things updated in a SAR pack is a big problem, too. We decided to simply rely on nifedipine for vasodilation, coronary disease, etc. *See below.*

[24] *Nitroglycerine spray reputedly has a longer shelf life, and better heat resistance, than the pills. Also, nifedipine is much out of favor for the treatment of chest pain, due to the hypotensive effect. Therefore, we have moved nifedipine to the altitude section, because it is still invaluable for high altitude pulmonary edema, and added nitroglycerine spray. When going to altitude, the nifedipine and acetazolamide can be transferred to the Minimum Kit if desired.*

[25] Both erythromycin and ciprofloxacin in Minimum Kit because: might have patient with open fracture and wish to administer oral antibiotic immediately; might have team member with severe diarrhea who needs ciprofloxacin immediately; antibiotics may be lifesaving if the patient is ill with a serious infection rather than injured.

[26] Comment> Rather than erythro, you might consider one of the newer macrolides. Azithromycin, though costly, offers the advantages of good GI tolerance (and we're in the woods after all) and the ability to carry a 2 week course in 6 pills.
Reply> Yes, but Zithromax® [azithromycin] is _very_ expensive, and these people need to buy their own drugs. If it were the same cost as erythro, would agree. It's also pregnancy category B, unlike Biaxin® [clairythromycin], so azithromycin is a better choice for that reason. However, unlike erythro, azithro is not a pediatric medication.
Many others suggested azithromycin as an alternative, and that samples are available; but doubt we can get enough samples for all who will need it.
Decreased from 40 to 24; this will provide 6 days of 250 QID, or 3 days of 500 QID. Resisted the temptation to go with just 500 mg tablets; 250 mg tablets allow spacing doses better for those with GI intolerance.

[27] *We had initially not considered azithromycin because of cost, but it now less expensive, covers most bacterial and atypical pathogens likely to affect team members in the backcountry, is safe in pregnancy and infancy, has few side effects, and can be taken once a day, improving compliance. Azithromycin is also now used routinely in all pediatric age groups, another argument in its favor. Some recent references include the following:*

1. Hopkins S
Clinical toleration and safety of azithromycin
Am J Med 1991; 91:40S-45S
2. Kuschner RA, Trofa AF, Thomas RJ, et al.
Use of azithromycin for the treatment of Campylobacter enteritis in travelers to Thailand, an area where ciprofloxacin resistance is prevalent
Clin Infect Dis 1995; 21:536-41
3. Juckett G
Prevention and treatment of traveler's diarrhea
Am Fam Physician 1999; 60:119-24, 135-6
4. Hoge CW, Gambel JM, Srijan A, Pitarangsi C, Echeverria P
Trends in antibiotic resistance among diarrheal pathogens isolated in Thailand over 15 years
Clin Infect Dis 1998; 26:341-5
5. Khan WA, Seas C, Dhar U, Salam MA, Bennish ML
Treatment of shigellosis: V. Comparison of azithromycin and ciprofloxacin. A double-blind, randomized, controlled trial
Ann Intern Med 1997; 126:697-703
6. Shanks GD, Ragama OB, Aleman GM, Andersen SL, Gordon DM
Azithromycin prophylaxis prevents epidemic dysentery

Trans R Soc Trop Med Hyg 1996; 90:316
7. Murphy GS, Jr., Echeverria P, Jackson LR, et al.
Ciprofloxacin- and azithromycin-resistant Campylobacter causing traveler's diarrhea in U.S. troops deployed to Thailand in 1994
Clin Infect Dis 1996; 22:868-9
8. Bessette RE, Amsden GW
Treatment of non-HIV cryptosporidial diarrhea with azithromycin
Ann Pharmacother 1995; 29:991-3
9. Kuschner RA, Trofa AF, Thomas RJ, et al.
Use of azithromycin for the treatment of Campylobacter enteritis in travelers to Thailand, an area where ciprofloxacin resistance is prevalent
Clin Infect Dis 1995; 21:536-41
10. Uchino U, Kanayama A, Hasegawa M, et al.
[Effects of azithromycin on fecal flora of healthy adult volunteers]
Jpn J Antibiot 1995; 48:1119-30
11. Rakita RM, Jacques-Palaz K, Murray BE
Intracellular activity of azithromycin against bacterial enteric pathogens
Antimicrob Agents Chemother 1994; 38:1915-21

[28] Some have argued for the addition of various favorite antibiotics: cephalexin, among others. We have resisted the temptation to provide an antibiotic for every conceivable condition, instead trying for one with good gram positive coverage that can be given to just about anyone (erythromycin), and one with excellent gram negative coverage, including all common causes of infectious diarrhea and UTIs.
Changed from 20 to 12. This should provide 6 days of 250 BID, or 3 days of 500 BID.

[29] *Azithromycin is now a second-line drug for infectious diarrhea, especially in areas where pathogens have developed resistance to quinolones such as ciprofloxacin; azithromycin is also a reasonably good drug for UTIs and therefore we have decided to eliminate ciprofloxacin from the drug list.*

[30] Can also be used as lubricant if needed.

[31] *Ophthalmic antibiotic ointment can be used for skin wounds, but not vice versa (the skin formulation is irritating to the eye).*

[32] Solid soap is not ideal, but is much lighter, and can be combined with some povadone-iodine solution for antibacterial effect.

[33] *Waterless hand sanitizer is now widely available in the U.S., and for clearing hands of bacteria and viruses, is reputedly as effective, if not more effective, than soap and water.*

[34] Comment> Do we need Hibiclens®?
Reply> Dunno about Hibiclens; might be nice, but again it's heavy. Plain soap (Dr. Bronner's, or whatever one's carrying) is probably OK.
Some suggested using foil packets of povadone-iodine solution; however, we've talked with enough people who've had them explode in their medical kits to stick with the more-rugged 15cc bottles.

[35] Can use antibiotic ointment as lubricant.

[36] *Many have found that heat or pressure in pack medical kits causes the covers provided with most digital thermometers to become unusable. A few small pieces of kitchen plastic wrap wrapped around the thermometer can serve as a substitute.*

[37] Comment> Why do we need thiamine?
Reply> To give to people who have been starving for a long time (i.e., weeks) when first feeding them, to prevent cardiovascular collapse (get a copy of the current Section 4 of WEMT Curriculum from http://www.wemsi.org/, if you want the details).

[38] Comment> I'm not sure I see the need for PO Haldol®.

Reply> EMT-Basics need to sedate patients, too.

[39]No stethoscope is included, as can simply place ear against the chest or abdomen for lung or heart or bowel sounds; and, BP cuff and stethoscope too heavy and of only minor utility compared to the weight.

[40]Increased from 3 to 10 yards, and added the word "cloth," to allow for taping an ankle securely with the contents of just one personal medical kit.

[41]This was added due to the great difficulty of getting tape or even Bandaids™ to stick in wet weather.

[42] *We have found that a Nalgene® or similar HDPE bottle provides a much more durable form of benzoin; and benzoin loose in a medical kit can be extremely destructive. Eight-cc Nalgene bottles are available from suppliers such as* http://www.fisherscientific.com/*, Cat No.: 02-923-11A, NNI No.: 2002 9025, for approximately US$0.50 each in lots of 12, as of fall 1999.*

[43] *These were moved to the Minimum Module to allow for application of benzoin.*

[44] Some have suggested the addition of a triangular bandage; however, this can usually be improvised from something such as the tail of someone's shirt; or, duct tape can be used instead.

[45] This makes a compact but very absorbent dressing; some suggested adding various types of trauma dressing, but we opted to pick something that was very small, not wanting to increase the size of the kit. Of course, it can also be used as a tampon for a female patient with menstrual flow.

[46] Several people suggested adding these, as they are ideal field dressings: waterproof but vapor-permeable.

[47] *Moved to the Minimum Module both to protect team member wounds against contamination by patient body fluids, and to provide IV site dressings.*

[48] For trephining subungual hematomas.

[49] Will be provided by WEMSI.

[50] *Discussions about the appropriateness of wound closure in the field continue to rage, in the "street" prehospital community as well as in the wilderness EMS community. A detailed discussion is beyond the scope of this document, but the principles that guided us in adding this stapler included: 1) the wilderness is at least as "clean" as most Emergency Departments, at least in terms of virulent and resistant bacteria; 2) delayed primary closure at four days from the initial wound provides excellent results, comparable to primary closure; 3) repairing complex wounds is a skill that takes much training and experience, certainly beyond the scope of a standard Wilderness EMT class; 4) staples are easier to use than sutures, more secure than suture strips for patients or team members who are actively assisting in their own evacuation, stapling of simple wounds can be learned in a few hours, and is a relatively low-risk procedure; and 5) patients can bleed to death from relatively minor wounds, especially scalp wounds, and especially when coagulopathic from hypothermia, during long evacuations. Therefore, we are including skin stapling for simple wounds and badly bleeding wounds, especially scalp wounds. 3M Precise DS-5 staplers are available from many suppliers; in 1998, they were available for less than US$7.00 each from* http://www.pssd.com/.

[51] These can be downloaded from http://www.wemsi.org/and printed locally.

[52] Physicians may want to add: penicillin, caffeine pills for caffeine withdrawal headaches, trimethoprim/sulfamethoxasole, Pyridium®, Duragesic® patches, IV midazolam, IV ketamine, IV thrombolytic (Eminase® is at present the best choice, as can be used in a single dose, though quite expensive), a cobalt blue penlight, a pocket otoscope and opthalmoscope, a prescription pad, Merocel® epistaxis tampons, a Foley catheter, a small skin stapler, some local anaesthetic, wire saw for amputations, and a Kelly clamp, needle holder, and suture material, at least for

tying off bleeders.

[53] *Recent studies e.g., [Turturro MA, Paris PM, Seaberg DC. Ann Emerg Med August 1995; 26:117-120. for example] show ketorolac no better for musculoskeletal pain than oral ibuprofen; therefore, we have deleted this medication. In this double-blind, placebo-controlled study, not only were 800 mg of PO ibuprofen and 60 mg IM ketorolac indistinguishable as far as degree of analgesia, they were indistinguishable in terms of time to analgesia!*

[54] *We discussed dilaudid as a possible alternative to morphine; however, many more people know the dosage for morphine than know the dosage for dilaudid. And since it is possible, even likely, that this kit might occasionally be used by someone who is familiar with a standard paramedic drug like morphine, but not dilaudid, we elected to stay with morphine.*

[55] *Over the years, we have had many discussions about the possible use of midazolam, or another benzodiazepines such as Valium. Midazolam acquired a bad reputation when large doses (10-15mg IV push) were used for sedation for endoscopy, without either visual or pulse-ox monitoring of ventilatory status. However, smaller doses (4-6 mg IV push for the usual adult) provide excellent relaxation, sedation and amnesia for common wilderness procedures such as dislocation reduction. And, larger doses (0.2 mg/kg, about 14 mg for an average adult) can be used IM for control of seizures. It also has the advantage for wilderness reductions that it wears off in about half an hour, leaving the patient ready to assist in rescue efforts. As a result, we have added a single multidose vial in the most advantageous concentration. This represents more midazolam than is likely to be needed, but is still lighter than an adequate dose in many more containers. Other long-acting benzodiazepines such as Ativan® or Valium® were considered, but the short action and rapid IM absorption led us to chose Versed®.*

[56] Comment> I would consider increasing ceftriaxone to 2 g for a full 24 hrs supply.
Reply> Agree.

[57] *Droperidol is increasingly used for both sedation and nausea, and thus provides a single drug that can be used to substitute for two drugs, prochlorperazine (e.g., Compazine®) and haloperidol (e.g., Haldol®)*

[58] For treating high altitude cerebral edema, asthma or other bronchospastic problems, or severe allergy.

[59] *We have found that Tubex™ ampules are not appropriate for most wilderness kits. Many of the ampules, for instance the 10 mg Morphine ampules, are partly filled with air; and, when they get warm, the air expands, pushing out the red rubber plug and emptying the contents of the ampule into one's pack. Therefore, we have abandoned Tubex™ ampules entirely.*

[60] For relieving tension pneumothorax.

[61] *By adding saline locks and a saline flush, WEMTs at the scene can start an IV and give multiple doses of IV medications. Too, it is often easier to start an IV before the patient has lost much fluid, and when IV supplies arrive, the IV can easily be inserted into the saline lock. We discussed adding a small bag of IV solution to the search kit – for example, Navy SEAL team members always carry a 250cc bag of Hespan in a pants pocket – but finally decided that for civilian use, the usefulness was not worth the weight.*

[62] Can be placed by digital technique even without a laryngoscope.

[63] *The endotracheal tube can be placed (and covered with one thickness of a gauze pad to prevent insect entry) and used without artificial ventilation, for example, in airway burns. However, if mouth-to-ET-tube ventilation is necessary, a one-way valve provides the WEMT protection from contamination from the patient's airway secretions. One-way valves with filters are available, but are generally bulky and heavy, and provide only incremental protection over a good one-way valve. One small, light one-way valve that works with an endotracheal tube is that manufactured by Laerdal for use with pocket masks; the one-way valves are available separately from many suppliers, including item #36295 at http://www.mooremedical.com.*

[64] Comment> Does one really need aspirin and ibuprofen? Both decent analgesics and NSAIDs.
Reply> Yes, but aspirin can be used by itself for the anti-platelet effect, for example for a student at our last WEMT class; he had coronary-ish chest pain first relieved by SL NTG but later returned and it was unrelieved by NTG. Aspirin is important for this. And, some people really do better with aspirin than acetaminophen or ibuprofen for minor aches, or at least think they do.

[65] Comment> Rather than cyclobenziprine, valium (though more of a hassle to get and keep secure) would be more versatile and is an effective muscle relaxant.
Reply> Recent research show that benzodiazepines don't really do much to relax muscles, and that Robaxin and Flexeril (cyclobenziprine) are more effective.
Comment> I would also favor the addition of an injectable benzodiazepine.
Reply> For sedation? Can use haloperidol for this. For muscle relaxation? See comments on Flexeril, above.

[66] *We finally concluded that the benefits of cyclobenziprine (e.g., Flexeril®) for muscle strains is really quite minimal compared to analgesics, rest and stretching. Therefore we removed this from the list.*

[67] UTIs are more common among women than men. Men: if you'd like to leave this out, please see the comments under antifungal cream.

[68] *The need for, or at least desire for, these medications can be supported by a trip to any local drugstore and a look at the shelves.*

[69] *As of September 1999, 3 mL "sample" or "travel" bottles of oxymetazoline nasal spray are not available in the U.S. However, Afrin® and some other brands of oxymetazoline nasal spray are now available in 15 mL bottles, which are relatively small and light.*

[70] We chose both long-acting and short-acting antihistamines because they have different uses. For example, stings or other acute allergic reactions usually need only short term treatment, and diphenhydramine can also be used as a short-acting sedative. whereas the sustained drying effect of sustained-release chlorpheniramine is ideal for viral URIs.

[71] *Dextromethorphan-containing cough drops are no longer generally available in the U.S. However, Humibid-DM, a combination of guiafenesin (a possibly-effective expectorant medication, reputedly to make it easier to cough out mucus) and dextromethorphan in a sustained-release combination that lasts 12 hours, is still widely available in pharmacies in the U.S. and, though it requires a prescription, is a lighter form of the effective cough suppressant dextromethorphan.*

[72] Comment> Eye: Fluorescein strips. Should a blue light be on the list?
Reply> Nice, but the fluorescein even works pretty well by daylight or mini-MagLite, and a blue penlight adds a lot of weight for only a little benefit, compared to the fluorescein strips, which weigh basically nothing.

[73] *Moved to the minimum kit where can also be used for skin wounds.*

[74] *Famotidine is an inexpensive, highly effective method for controlling gastritis or reflux – extremely common problems during SAR operations due to lack of sleep, stress, and excess caffeine consumption. Famotidine tablets are considerably lighter and smaller than enough antacid tablets to provide a similar effect.*

[75] It was suggested that we cut down on the number of these tablets; though constipation can be disabling, it's not usually as disabling as diarrhea. Changed from 6 to 4.

[76] *After long discussion, we elected to leave this out of the kit – although constipation occurs frequently in the outdoors and during SAR misions, and sometimes leads to abdominal pain, constipation is seldom recognized as the cause, and thus the demand for laxative pills is low in the field. A laxative is still appropriate for distribution as needed at the SAR base camp.*

[77] *Since we have a H_2blocker, and Imodium plus an antibiotic are better treatment for*

gastroenteritis, the bismuth tablets seem superfluous.

[78] *Aveeno® cream has recently become available. Both Pramosone® and Aveeno® contains pramoxine, a topical anaesthetic that is non-sensitizing (non-allergy-provoking, unlike many other topical agents including diphenydramine, e.g., Benadryl®). Thus both are highly effective for the pain or itching of sunburn or poison ivy. Aveeno®, unlike Pramosone®, doesn't include hydrocortisone. However, the anti-itch and anti-allergy effects of hydrocortisone are minimal compared with the high-strength steroid cream, listed above. Aveeno® also includes oatmeal and calamine, which are also good topical anti-itch agents.*

[79] Oral dexamethasone [e.g., *Decadron*®] not carried for high altitude cerebral edema, as 30 mg of predinsone is equivalent to the 4 mg dexamethasone dose usually used for HACE.

[80] Lotrisone® was suggested as an alternative for "shotgun" therapy of itchy rashes or vaginitis. At present, we are still staying with separate antifungal and steroid creams, as more effective and more flexible.
One suggestion was to use the new, highly effective antifungal terbinafine (*Lamasil*®) instead of miconazole. However, it is prescription-only, costs 2 to 10 times as much as miconazole, and there is no information on whether or not it can be used to treat yeast vaginitis.
Women reviewing this medical kit have almost universally demanded something for yeast vaginitis. Therefore, we discount suggestions that we drop this medication if the suggestion comes from a man.

[81] *We also discussed the use of an oral antifungal, as is commonly used to treat yeast vaginitis; however, these oral regimes are not currently accepted for jock itch and athlete's foot, which are also common wilderness afflictions. We realized that, to be effective for yeast vaginitis, antifungal cream needs to be applied with an intravaginal applicator, as comes with Monistat-7® and similar vaginal antifungals. However, such antifungal cream/applicator combinations generally include more than 15g of cream, and are relatively heavy – 3 oz. We realized that Lotrimin® solution is effective for the organisms that cause yeast vaginitis, athlete's foot, and jock itch. And a 10 mL bottle of Lotrimin® solution weighs only 1 oz. And a 1 cc TB syringe, without needle, makes an excellent lightweight vaginal applicator; one can easily pull the dropper top off of the Lotrimin® bottle and suck up a 1 mL daily dose of the Lotrimin solution and apply intravaginally.*

[82] Some suggested the addition of a traction device; however, a traction device can usually (though not always) be improvised with materials at hand.

[83] Removed butterfly strips as suture strips much superior.

[84] *Moved to Minimum Module.*

[85] For caffeine withdrawal headaches.

[86] Eminase® is at present the best choice, as can be used in a single dose.

[87] *WEMSI conducted some informal research on methods of amputation in confined spaces – including races between different methods. The winner overall was a two-step process – using a serrated lockback folding knife to cut through skin, tendon, soft tissue; and then using a folding camp saw to cut the bone. This one topic engendered a long discussion on the wilderness-emergency-medicine Internet discussion list – see www.wemsi.org for the list archives.*